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Nota di contenuto	1 Lignocellulosic derived Carbohydrates – A splendid biomolecule for for environmental sustainability application -- 2. The environment of Lignocellulosic waste to biofuel -- 3. Significance of Harvesting Green Energy: Emerging Trends and Prospects in Paddy Straw-based Biohydrogen Technologies -- 4. Diverse cellulase sources and their potential for conversion of paddy straw into bioethanol via contribution of nanocatalyst -- 5. Paddy straw waste and its conversion into value added products -- 6 Agriculture waste availability for nanomaterial synthesis: Recent Advances -- 7. Magnetic Nanocatalysts for Biofuel Production -- 8. Nano zeolites synthesis and their applications in biofuel production -- 9. Advances in Nano-catalysts Mediated Biodiesel Production -- 10. Nanobiocatalysts used for the production of Bio-ethanol and Biodiesel.
Sommario/riassunto	The book discusses the various sustainable approaches to combine agrowaste and nanomaterials into catalysts or nanocatalysts with the objective of enhancing biofuel production. It explores the practical sustainability of agronanocatalysts in bioenergy production at a mass scale, while also addressing the existing challenges and proposes sustainable remedies to overcome these limitations. Additionally, the

book dives into the cost considerations, recognizing it as a major concern for the widespread utility of catalysts, and explores viable commercial applications in this context. Nanomaterials continue to attract attention in the field of proteins and enzymes due to their versatile physicochemical properties and potential. They offer opportunities to enhance various biofuel production processes by serving as catalysts in the reaction medium. For instance, studies have highlighted the significant improvements in cellulase enzyme production, stability, pretreatment of lignocellulosic biomass, and enzymatic hydrolysis efficiency achieved through the utilization of nanomaterials. The impact of nanomaterials on fermentative hydrogen production has also been documented. While the application of nanomaterials in biofuel production processes has been reported in the literature, there remains a need to focus on the type of nanomaterials, their synthesis, and their specific effects on important process parameters. Addressing and evaluating these factors is crucial to effectively improve and streamline biofuel production processes using nanomaterials. The book serves as a comprehensive introduction to nanomaterials and nanotechnology in biofuel production, catering to the needs of researchers, academicians and students.